

Highways England Operational Metrics Manual

June 2020



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1. Introduction

1.1 Introduction to the *Operational metrics manual*

The Highways England's *Operational metrics manual* (OMM) provides a comprehensive view of the performance measures against which we will be monitored over the Road Period 2 from 1 April 2020 to 31 March 2025.

Highways England produces and owns the OMM. We have communicated it with the Department for Transport and the Office of Rail and Road (ORR), and it has been approved by the Secretary of State for Transport. We've taken the OMM through a series of iterations to create a document that provides a common understanding of how Highways England will report against the delivery of the *Performance Specification*.

1.2 Background

On 11 March 2020, the government published its second Roads Investment Strategy (RIS) for the period 2020-25 (RIS2). The strategy sets out a long-term vision for England's motorways and major roads known as the strategic road network (SRN). The first RIS outlined a five-year, £15.2 billion investment plan covering the period 2015-20. RIS2 will build on the work we have done over the last five years with a further £27.4 billion of investment between 2020-25.

The government has set out what it expects from Highways England between 2020 and 2025 in the *Performance Specification*, which is part of the RIS2 suite of documents. The *Performance Specification* includes a series of metrics. We will use these metrics to drive our work in maintaining a safe, reliable and effective SRN which supports the economy, and contributes to wider environmental and social outcomes.

The metrics include Key Performance Indicators (KPIs), where a target performance has been set by the Department for Transport, and Performance Indicators (PIs), which support the KPIs and outcome areas. The *Performance Specification* also sets certain 'commitments'. These may be for us to develop a strategy or new metric, or to gather information on a specific issue. We have provided more context on KPIs and PIs below.

1.2.1 Key Performance Indicators

These focus on activities or outcomes which are most important, either for road users or communities that live near to the SRN, or which support wider government objectives. Each outcome area has one or more KPIs (see 3.2). This ensures that we can focus performance through our investment plans, and our operational priorities for the network.

Most KPIs measure outputs where we have a high degree of control, but there are some where we have less direct influence. An example is the KPI for the *Improving Safety for All* outcome area, which measures the number of people killed or seriously injured on the SRN each year. We can influence safety on our network through how we maintain the condition of the roads, manage roadworks and deal with incidents, and the design standards to which roads are built and maintained. However, we have limited influence on driver behaviour and traffic demand levels, and some other factors such as vehicle design.

Generally, KPIs have targets attached to them, against which the ORR will monitor our performance. Where targets are set for a metric over which Highways England has limited control, ORR will look at Highways England's performance in the round. They will consider whether we have taken appropriate steps in influencing components of the metric where we do have control.

1.2.2 Performance Indicators

The KPIs by themselves do not, and cannot, fully reflect how we and the SRN are performing. PIs offer trend-based measures to customers and stakeholders. They provide additional context to KPIs, or cover areas of specific focus within an outcome area to inform ORR's monitoring.

Generally, PIs are not targeted. However, for those that provide unique measures of performance that are important for road users, a measure of success is provided against which our performance can be judged by its customers.

1.3 Description of the Operational metrics manual

The OMM includes technical notes which set out the parameters that define each KPI and PI. We have designed these technical notes in a common format to ensure consistency across all metrics. They include the name and definition of the metric and how it contributes to the outcome area it serves. The OMM details targets for the KPIs and PIs where appropriate. It also includes a summary of how performance is calculated and when it is reported. This section also sets out coverage included in the metric and definitions.

1.4 Intended audience for the *Operational metrics manual*

The OMM is primarily used by Highways England, the ORR and the Department for Transport to ensure all performance measure definitions and targets are clearly understood. We make it publicly available (via our website) so that road users and our other stakeholders can clearly see the basis on which we are being monitored across all the outcome areas.

Our employees use the OMM as a regular source of reference in the delivery of the *Performance Specification* measures, and in the reporting of performance.

2. Governance and assurance of KPI and PI metrics

2.1 Governance and sign-off of metrics

2.1.1 Role Definitions

Ultimate ownership of metrics and targets lies with the Department for Transport. The metrics within the *Performance Framework* are owned by the Highways England Executive Committee, as is performance. Evidence and data for the metrics are owned by the Metric Owners, and performance reporting is owned by Finance and Business Services with input from Strategy and Planning.

The following roles within Highways England have been defined in the context of the OMM:

Accountable director – An Accountable director has overall responsibility for a metric and has remit to commission the business to perform the appropriate functions to ensure effective performance and delivery. This ownership was appointed by the chief executive.

Metric owner – A Metric owner is allocated for each KPI and PI. Their main role is to ensure accurate reporting of performance against the metric. They may, in some cases, also be working on delivering performance.

2.1.2 Governance Structure

Governance for the OMM has a clear line of sight to the Executive Committee as set out below.

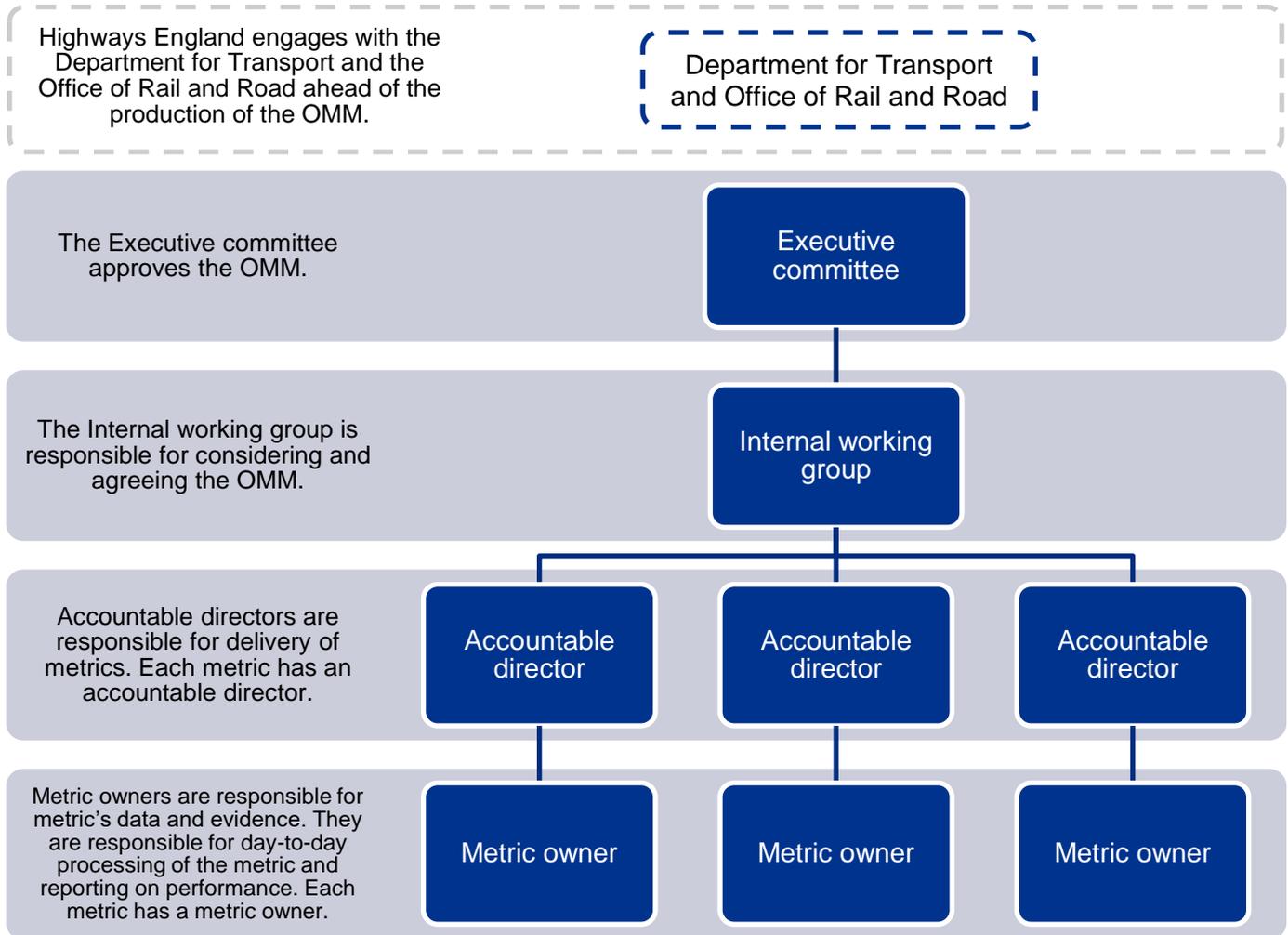


Figure 1: Governance for the OMM

2.2 Change control

We do not anticipate significant change to the metrics within the OMM as they are expected to remain fixed for the Road Period 2 (2020-25). This is unless a change is agreed with the Department for Transport and approved by the Secretary of State. Where a change is required, however, the change control process is applied. All changes (major and minor) to the OMM, including to the technical notes in Appendix A, go through a structured governance and approval process prior to being actioned.

Minor changes such as typographical and grammatical corrections or other small alterations to wording or layout.

Major changes are changes that substantially affect information in the OMM. These take the form of, for example, changes to the calculation process or data source behind a metric, or other alterations that impact on the interpretation or conclusions of the OMM. New metrics or any other commitments additional to the existing KPIs and PIs are considered major changes.

2.3 Reporting arrangements

The primary basis for ORR to assess our performance will be through the annual monitoring reporting statements for each 12-month period ending 31 March. The review and, where appropriate, challenge of this annual return will enable ORR to:

- monitor and report on delivery of the *Performance Framework* and aspects of the licence
- monitor and report on appropriateness and the delivery of action plans that Highways England is already undertaking or formulating to tackle areas needing improvement,
- identify and escalate new issues,
- undertake enforcement, through improvement notices and fines; and,
- provide information to the Secretary of State on the development of the next Road Investment Strategy.

Details of how ORR expects the reporting process to be undertaken, including the expectations for internal governance and sign off within Highways England, can be found in ORR's Monitoring Reporting Guidelines document (https://orr.gov.uk/__data/assets/pdf_file/0005/42953/monitoring-reporting-guidelines-for-highways-england-for-road-period-2.pdf).

The ORR will publish its assessment of our performance through an annual report, which will review the operational performance, delivery of investment, financial performance and efficiency of Highways England during the financial year and cumulatively for the Road Period to date, as informed by our annual monitoring return.

2.4 The assurance plan for metrics

We apply a structured assurance process to provide confidence in the accuracy and quality of its reported data. This includes regular internal assurance focusing on data integrity and verification of reported figures.

3. Performance monitoring and reporting overview

3.1 The Performance Specification

As noted in section 1.2 above, the *Performance Specification* published by the Department for Transport sets out what the government expects from us from 2020 to 2025. This provides a series of metrics against which performance is monitored and measured.

3.2 The Key Performance Indicators and Performance Indicators for Road Period 2

To develop each of the metrics, the DfT has set out seven principles for us to follow. These are:

1. **Realistic, yet challenging** – targets are challenging, achievable and evidence-based.
2. **Evidence-based** – there is evidence that demonstrates we are focused on the right thing in the eyes of road users and the government. There is evidence that demonstrates the target is worth achieving.
3. **Control and influence** – we can influence our own performance and the metric incentivises the right behaviour.
4. **Measurable** – the metric can be clearly measured and is meaningful. Data is robust and has been checked.
5. **Future-proof** – the metric will stay relevant. It reflects potential future scenarios (technological or otherwise).
6. **Aligns with customer and government priorities** – the outcome is wanted. It aligns with the priorities of all types of road user and with the government's overall vision.
7. **Accessible** – everyone can understand and engage with the metric and knows what success looks like.

The metrics set out in the OMM comply with the above criteria, are consistent with the *Performance Specification* and have been developed in collaboration with the department, the ORR and Transport Focus. ORR has assessed the

targets in terms of their challenge and our ability to deliver them within the context of the wider RIS as part of its Efficiency Review.

We have worked with the DfT in a programme of engagement with third-parties to ensure our proposals align with our stakeholders' priorities. The metrics provide a basis against which our service provision can be measured, and for which we are accountable. They enable us to demonstrate progress towards securing positive outcomes for our road users. These outcomes are:

1. **Improving safety for all**
2. **Providing fast and reliable journeys**
3. **A well maintained and resilient network**
4. **Being environmentally responsible**
5. **Meeting the needs of all road users**
6. **Achieving efficient delivery**

Each of the KPIs and PIs detailed within this OMM is assigned to one of the outcome areas above. The six outcome areas and the metrics within them make up one part of our overall *Performance Framework*. This has been designed to provide a logical framework for transparently, demonstrating and measuring performance and managing risk.

The KPI and PI metrics for RP2 are shown in Figure 2.

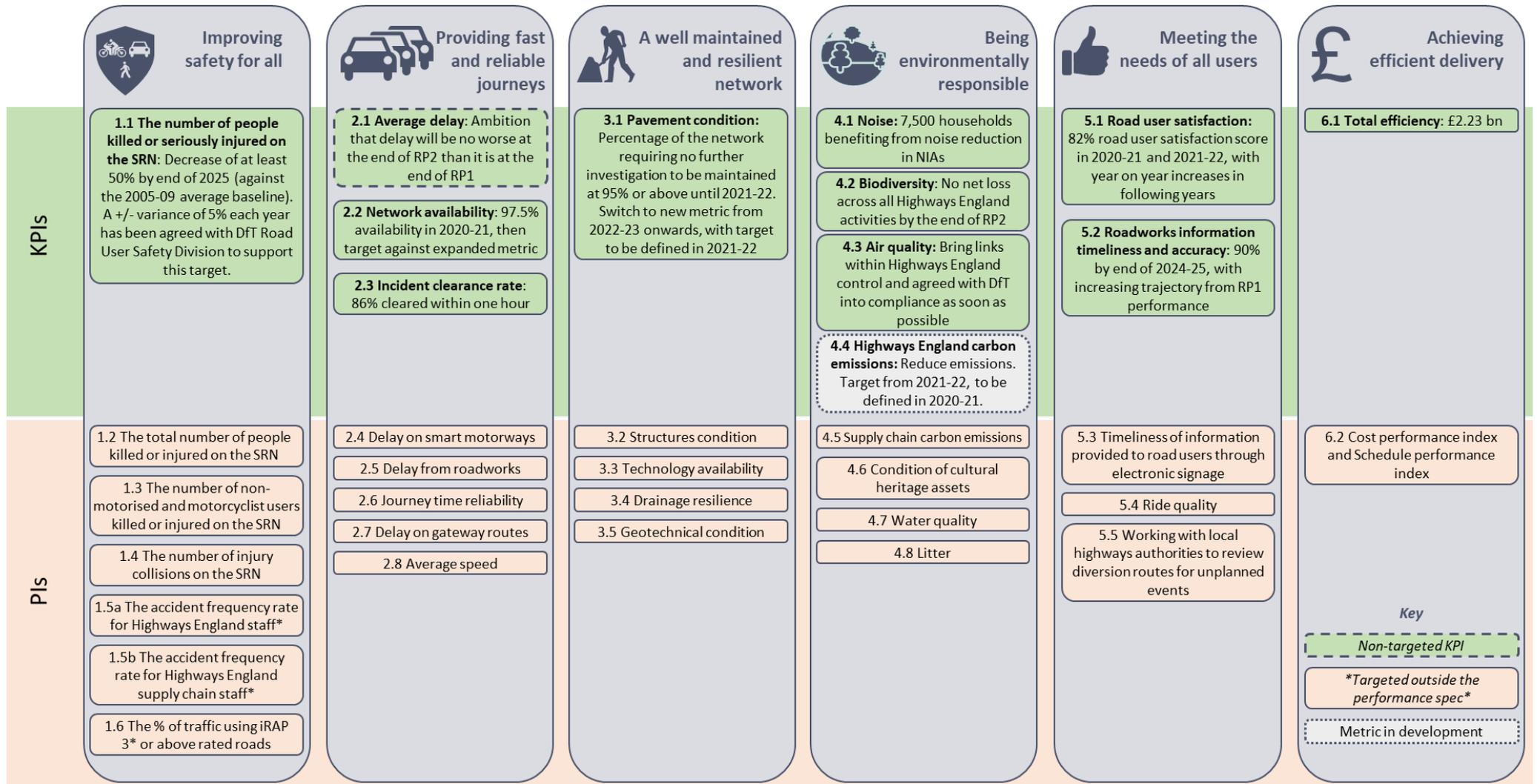


Figure 2: KPI and PI metrics for RP2

A full list of the metrics and technical notes providing detailed information for each metric are included in Appendix A.

Appendix A. Metric-specific technical notes

List of technical notes

1. [Improving safety for all](#)

- 1.1 KPI [The number of people killed or seriously injured on the SRN](#)
- 1.2 PI [The total number of people killed or injured on the SRN](#)
- 1.3 PI [The number of non-motorised and motorcyclist users killed or injured on the SRN](#)
- 1.4 PI [The number of injury collisions on the SRN](#)
- 1.5a PI [The accident frequency rate for Highways England staff](#)
- 1.5b PI [The accident frequency rate for Highways England supply chain staff](#)
- 1.6 PI [The % of traffic using iRAP 3* or above rated roads](#)

2. [Providing fast and reliable journeys](#)

- 2.1 KPI [Average delay](#)
- 2.2 KPI [Network availability](#)
- 2.3 KPI [Incident clearance rate](#)
- 2.4 PI [Delay on smart motorways](#)
- 2.5 PI [Delay from roadworks](#)
- 2.6 PI [Journey time reliability](#)
- 2.7 PI [Delay on gateway routes](#)
- 2.8 PI [Average speed](#)

3. A well maintained and resilient network

- 3.1 KPI [Pavement condition](#)
- 3.2 PI [Structures condition](#)
- 3.3 PI [Technology availability](#)
- 3.4 PI [Drainage resilience](#)
- 3.5 PI [Geotechnical condition](#)

4. Being environmentally responsible

- 4.1 KPI [Noise](#)
- 4.2 KPI [Biodiversity](#)
- 4.3 KPI [Air quality](#)
- 4.4 KPI [Highways England carbon emissions](#)
- 4.5 PI [Supply chain carbon emissions](#)
- 4.6 PI [Condition of cultural heritage assets](#)
- 4.7 PI [Water quality](#)
- 4.8 PI [Litter](#)

5. Meeting the needs of all road users

- 5.1 KPI [Road user satisfaction](#)
- 5.2 KPI [Roadworks information timeliness and accuracy](#)
- 5.3 PI [Timeliness of information provided to road users through electronic signage](#)
- 5.4 PI [Ride quality](#)
- 5.5 PI [Working with local highways authorities to review diversion routes for unplanned events](#)

6. Achieving efficient delivery

- 6.1 KPI [Total efficiency](#)
- 6.2 PI [Cost performance index and Schedule performance index](#)

Information regarding the KPI and PI Technical Notes

The information in this document represents in full Highways England's reporting position at the start of Road Period 2. The OMM will evolve over time as, for example, new metrics are introduced, reporting systems and processes change and improve, datasets change or are enhanced, and methodologies are updated to reflect these changes. As such there is a change control process detailed in Section 2.2 of the OMM that will facilitate this.

There are a number of factors outside Highways England's control or influence which may affect performance against its metrics. These include factors such as extreme weather, natural disasters, political change, availability of funding and resources, volume of traffic, changes by third-party data/service providers, and other industry developments. Targets may need to be adjusted to allow for unexpected changes or external factors likely to significantly impact performance. In this event the change control process detailed in Section 2.2 of the OMM will be implemented.

Each technical note provides a definition of the KPI or PI metric covered. Items not specifically identified are not included within the scope of the metric.

Outcome area

1 Improving safety for all

Summary page for collision-related metrics

List of metrics included

Key Performance Indicators

1.1 The number of people killed or seriously injured on the strategic road network (SRN)

Performance Indicators

1.2 The total number of people killed or injured on the SRN

1.3 The number of non-motorised and motorcyclist users killed or injured on the SRN

1.4 The number of injury collisions on the SRN

Outcome area (A.2)

Improving safety for all

Purpose (A.3)

Metrics in this outcome area will measure progress towards Highways England's vision that no one should be harmed when travelling or working on the SRN.

This group of casualty metrics focuses on the impact of incidents on the SRN.

Coverage (A.11)

Only personal injury collisions attended by or reported to the police and included in STATS19 across all trunk roads and motorways forming the SRN including roads managed by Design, Build, Finance, and Operate (DBFO) organisations.

The referenced network from which road safety performance is assessed will be reviewed annually and where required updated to ensure it aligns with the performance data.

Defined input data (A.12)

Casualty data from STATS19 Road Accident Dataset collected by police forces and provided by the Department for Transport.

Definitions (A.13)

A fatal injury is defined as any human casualty who has sustained injuries which caused death less than 30 days after the incident. Confirmed suicides are excluded.

A serious injury is defined as an injury for which a person is detained in hospital as an in-patient, or any of the following injuries, whether they are detained in hospital: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the incident.

Slight injury is an injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.

A vulnerable user casualty is defined as a pedestrian, pedal cyclist, motorcyclist or equestrian killed or injured in an incident.

KPI	1.1	The number of people killed or seriously injured on the SRN	A. Definition and target		
Metric-specific information					
<i>(see collision-related metrics summary page for information common to 1.1, 1.2, 1.3 and 1.4)</i>					
A.1 Description					
The number of people killed or seriously injured on the SRN					
A.2 Outcome area					
Improving safety for all					
A.3 Purpose					
This metric focuses on the most serious incidents on the SRN with a view to reducing the number of occurrences.					
A.4 Target					
Ongoing reduction in the number of people killed or seriously injured on the SRN as reported in STATS19 to support a decrease of at least 50% by the end of 2025 against the 2005-09 average baseline. A +/- variance of 5% each year has been agreed with DfT Road User Safety Division to support this target.					
A.5 Metric calculation					
$KSIs = \sum \text{Number killed and seriously injured on the SRN in a calendar year}$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Number	Zero	Annual	Calendar year	Count	
A.11 Coverage (specific to this metric)					
None					
A.12 Input data (specific to this metric)					
None					
A.13 Definitions (specific to this metric)					
None					

PI	1.2	The total number of people killed or injured on the SRN			A. Definition and target
Metric-specific information					
<i>(see collision-related metrics summary page for information common to 1.1, 1.2, 1.3 and 1.4)</i>					
A.1 Description					
The total number of individuals killed or injured on the SRN					
A.2 Outcome area					
Improving safety for all					
A.3 Purpose					
This metric, along with the others in this outcome area, will measure progress towards Highways England's vision that no one should be harmed when travelling or working on the SRN.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
<i>Total casualties = \sumAll casulaties recorded in STATS19 on the SRN in a calendar year</i>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Number	Zero	Annual	Calendar year	Count	
A.11 Coverage (specific to this metric)					
None					
A.12 Input data (specific to this metric)					
None					
A.13 Definitions (specific to this metric)					
None					

PI	1.3	The number of non-motorised and motorcyclist users killed or injured on the SRN			A. Definition and target
<i>Metric-specific information</i>					
<i>(see collision-related metrics summary page for information common to 1.1, 1.2, 1.3 and 1.4)</i>					
A.1 Description					
The total number of pedestrian, pedal cyclist, motorcyclist and equestrian casualties on the SRN. Disaggregation will be provided by road user group to assist understanding of the PI but are not considered PIs in their own right.					
A.2 Outcome area					
Improving safety for all					
A.3 Purpose					
This metric, along with the others in this outcome area, will measure progress towards Highways England's vision that no one should be harmed when travelling or working on the SRN.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
<i>Vulnerable user casualties = \sumVulnerable user casualties on the SRN in a calendar year</i>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Number	Zero	Annual	Calendar year	Count	
A.11 Coverage (specific to this metric)					
None					
A.12 Input data (specific to this metric)					
None					
A.13 Definitions (specific to this metric)					
None					

PI	1.4	The number of injury collisions on the SRN			A. Definition and target
Metric-specific information					
<i>(see summary page for collision- related metrics for information common to 1.1, 1.2, 1.3 and 1.4)</i>					
A.1 Description					
The total number of collisions recorded that resulted in at least one injury (of any severity) on the SRN.					
A.2 Outcome area					
Improving safety for all					
A.3 Purpose					
This metric, along with the others in this outcome area, will measure progress towards Highways England’s vision that no one should be harmed when travelling or working on the SRN.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
<i>Total Injury Collisions = \sumPersonal injury collisions recorded on the SRN in a calendar year</i>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Number	Zero	Annual	Calendar year	Count	
A.11 Coverage (specific to this metric)					
None					
A.12 Input data (specific to this metric)					
None					
A.13 Definitions (specific to this metric)					
None					

PI	1.5a	The accident frequency rate for Highways England staff	A. Definition and target		
A.1 Description					
The accident frequency rate for Highways England staff based on Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) incidents and normalised by the number of hours worked in a year.					
A.2 Outcome area					
Improving safety for all					
A.3 Purpose					
This metric, along with the others in this outcome area, will measure progress towards Highways England's vision that no one should be harmed when travelling or working on the strategic road network.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\text{Accident frequency rate} = \frac{(\text{No of reportable incidents} - \text{the no of dangerous occurrences}) \text{ per year}}{\text{No of hours worked in the year}} * 100000$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Accident frequency rate: RIDDORs per 100,000 hours worked	Two	Monthly	Financial year	12-month rolling rate	
A.11 Coverage					
All reportable incidents involving Highways England staff except "dangerous occurrences", as defined in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013.					
A.12 Input data					
The number of RIDDOR incidents in the reporting period.					
The number of hours worked by Highways England employees in the reporting period.					

PI	1.5b	The accident frequency rate for Highways England supply chain staff			A. Definition and target
A.1 Description					
The accident frequency rate for Highways England supply chain staff based on Reporting of Injuries Diseases and Dangerous Occurrences Regulations (RIDDOR) incidents and normalised by the number of hours worked in a year.					
A.2 Outcome area					
Improving safety for all					
A.3 Purpose					
This metric, along with the others in this outcome area, will measure progress towards Highways England's vision that no one should be harmed when travelling or working on the strategic road network.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\text{Accident frequency rate} = \frac{(\text{No of reportable incidents} - \text{No of dangerous occurrences}) \text{ per year}}{\text{No of hours worked in the year}} * 100000$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Accident frequency rate: RIDDORs per 100,000 hours worked	Two	Monthly	Financial year	12-month rolling rate	
A.11 Coverage					
All reportable incidents except "dangerous occurrences", as defined in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 reported by Highways England contractors and subcontractors, including Design, Build, Finance and Operate (DBFO) organisations.					
A.12 Input data					
The number of RIDDOR incidents reported by Highways England supply chain partners using Highways England accident and incident reporting system.					
The number of hours worked by supply chain employees in the reporting period.					

PI	1.6	The % of traffic using iRAP 3* or above rated roads			A. Definition and target
A.1 Description					
The percentage of travel on roads with an International Road Assessment Programme (iRAP) safety rating of 3-star or better calculated using the latest version of the iRAP model (version 3.02).					
A.2 Outcome area					
Improving safety for all.					
A.3 Purpose					
This metric, along with the others in this outcome area, will measure progress towards Highways England’s vision that no one should be harmed when travelling or working on the strategic road network. The iRAP rating provides a different but complementary approach to measuring improvement in safety over Road Period 2 compared with other KPIs and PIs.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
The percentage of travel on 3+ star roads is assessed and determined through the iRAP model (version 3.02). This assessment is based on the star rating of the road divided by total travel in a calendar year and expressed as a percentage.					
Baseline performance will be calculated using data from April 2020 and the end of the Road Period in 2025 using the latest version of the iRAP model (version 3.02).					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	5 years	Calendar year (star ratings based on survey in April)	Percentage at end of RP2	
A.11 Coverage					
All trunk roads and motorways forming the strategic road network, including roads managed by Design, Build, Finance, and Operate (DBFO) organisations.					
A.12 Input data					
This is defined by the requirements of the latest version of the iRAP model (version 3.02). Star ratings are based on road inspection data, collision data, traffic volume, and vehicle speed and road layouts.					

Outcome area 2 Providing fast and reliable journeys

Summary page for delay-related metrics

List of Metrics Included

Key Performance Indicators

2.1 Average delay

Performance Indicators

2.4 Delay on smart motorways

2.5 Delay from roadworks

2.6 Journey time reliability

2.7 Delay on gateway routes

2.8 Average speed

Purpose (A.3)

This group of metrics provides a means of measuring success against Highways England's aim to provide fast and reliable journeys.

Coverage (A.11)

Motorised vehicles travelling at all times on the trunk roads and motorways forming the strategic road network, including roads managed by Design, Build, Finance, and Operate (DBFO) organisations, but excluding roundabouts and slip roads.

Where coverage for individual metrics varies from this it is detailed in section A.11 of the relevant technical note.

Input data (A.12)

Flow data are obtained from Traffic Monitoring Unit (TMU), Traffic Appraisal, Modelling and Economics (TAME) and Motorway Incident Detection and Automatic Signalling (MIDAS) counting sites and accessed from the Roads Information Framework (RIF).

Journey time data is sourced from the INRIX Fused Journey Time fields in the fused floating vehicle and sensor data (FVD) tables in RIF.

National Traffic Information Service Network Model is based on the "HERE" (a map product used by INRIX) and adapted for Highways England use by Network Information System (NIS).

Definitions (A.13)

Smart motorways are sections of motorway that use variable mandatory speed limits to increase capacity and smooth the flow of traffic, as designated in the National Traffic Information System Network Model.

Gateway Routes are sections of the strategic road network serving the UK's most economically important ports and airports as designated in the National Traffic Information System Network Model.

KPI	2.1	Average Delay	A. Definition and target	
Metric-specific information				
(see <i>delay-related metrics summary page</i> for information common to 2.1, 2.4, 2.5, 2.6, 2.7 and 2.8)				
A.1 Description				
Average delay to road users calculated as the difference between the observed travel time and the speed limit travel time.				
A.2 Outcome area				
Providing fast and reliable journeys				
A.3 Purpose				
This metric provides a measure of the overall delay experienced by users of the strategic road network.				
A.4 Target				
Ambition – Performance to be no worse at the end of Road Period 2 than it is at the end of Road Period 1. This KPI does not have a target.				
A.5 Metric calculation				
$\text{Average delay} = \frac{\sum([\text{Observed travel time} - \text{Speed limit travel time}] \times \text{profile flow} \times \text{length of link})}{\sum(\text{Profile flow} \times \text{length of link})}$				
Where travel time is in seconds per vehicle per mile. Delay is capped at the speed limit and calculated as the larger of either (Observed travel time – Speed Limit travel time) or zero.				
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Seconds per vehicle per mile	One	Monthly	Financial year	12 month rolling average
A.11 Coverage (specific to this metric)				
None				
A.12 Input data (specific to this metric)				
None				
A.13 Definitions (specific to this metric)				
None				

KPI	2.2	Network availability			A. Definition and target
A.1 Description					
The percentage of the strategic road network that is free from lane closures due to roadworks.					
A.2 Outcome area					
Providing fast and reliable journeys					
A.3 Purpose					
This metric provides a means of measuring success against Highways England's aim to deliver road improvements with minimum disruption to road users by ensuring the negative effects of road closures are kept to a minimum.					
A.4 Target					
<p>Achieve 97.5% lane availability in 2020-21.</p> <p>The existing metric is expected to be replaced during 2020-21 by a new expanded metric. A baseline level of performance for the new metric will be determined in 2020-21 and will be used to set a target covering the remainder of Road Period 2.</p>					
A.5 Metric calculation					
$\text{Network availability} = 100 \times \left(1 - \frac{\sum([\text{Number of Lanes Closed} - \text{Number of Lanes added}] \times \text{Length impacted} \times \text{Time})}{\sum(\text{Total network length} \times \text{Time})} \right)$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	Monthly	Financial year	12 month rolling percentage	
A.11 Coverage					
<p>Closures at all times, except those arising from incidents.</p> <p>All roadworks on trunk roads and motorways forming the strategic road network, including those managed by Design, Build, Finance, and Operate (DBFO) organisations, but excluding roundabouts and slip roads.</p>					
A.12 Input data					
<p>Closures data are held on the Network Occupancy Management System (NOMS) and provided by Highways England suppliers and contractors.</p> <p>The data for permanent lanes (network length) is held on the asset management system.</p>					
A.13 Definitions					
<p>Incidents are unplanned events such as collisions between vehicles, breakdowns, debris or animals on the network, or any other event that does not result in the requirement for roadworks to take place.</p> <p>A lane closure due to roadworks is where a lane is fully closed to traffic.</p>					

KPI	2.3	Incident clearance rate			A. Definition and target
A.1 Description					
The percentage of incidents on the motorway that impact traffic flow but are cleared in less than one hour.					
A.2 Outcome area					
Providing fast and reliable journeys					
A.3 Purpose					
This KPI provides a means of measuring success against Highways England's aim to provide fast and reliable journeys by rapidly restoring motorway traffic flow after an incident.					
A.4 Target					
86% of motorway incidents cleared within one hour.					
A.5 Metric calculation					
$Incident\ clearance = \frac{\sum Number\ of\ motorway\ incidents\ cleared\ in\ 1\ hour}{\sum Number\ of\ motorway\ incidents} \times 100$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	Monthly	Financial year	12 month rolling percentage	
A.11 Coverage					
Motorway incidents at all times on the strategic road network plus the A282 Dartford Crossing / tunnel, including motorways managed by Design, Build, Finance, and Operate (DBFO) organisations.					
A.12 Input data					
Lane impacting incidents and duration obtained from Highways England's Incident Management System (ControlWorks).					
A.13 Definitions					
Incidents are unplanned events such as collisions between vehicles, breakdowns, debris or animals on the network, or any other event that does not result in the requirement for roadworks to take place.					

PI	2.4	Delay on smart motorways	A. Definition and target	
Metric-specific information				
(see <i>delay-related metrics summary page</i> for information common to 2.1, 2.4, 2.5, 2.6, 2.7 and 2.8)				
A.1 Description				
Average delay to road users on smart motorways calculated by comparing actual journey time with the minimum journey time (based on all vehicles travelling at upper limit for variable speed limit sections). It is a subset of the Average delay metric.				
A.2 Outcome area				
Providing fast and reliable journeys				
A.3 Purpose				
This metric provides a measure of the overall delay experienced by users of smart motorways				
A.4 Target				
None (PI)				
A.5 Metric calculation				
$\text{Average delay on smart motorways} = \frac{\sum([\text{Observed travel time} - \text{Speed limit travel time}] \times \text{profile flow} \times \text{length of link})}{\sum(\text{Profile flow} \times \text{length of link})}$				
Where a travel time is in seconds per vehicle per mile. Delay is capped at the speed limit and calculated as the larger of either (Observed travel time – Speed Limit travel time) or zero.				
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Seconds per vehicle per mile	One	Monthly	Financial year	12 month rolling average
A.11 Coverage (specific to this metric)				
All vehicles travelling at all times on open smart motorways within the strategic road network, including smart motorways managed by Design, Build, Finance, and Operate (DBFO) organisations.				
A.12 Input data (specific to this metric)				
None				
A.13 Definitions (specific to this metric)				
None				

PI	2.5	Delay from roadworks	A. Definition and target	
Metric-specific information				
(see <i>delay-related metrics summary page</i> for information common to 2.1, 2.4, 2.5, 2.6, 2.7 and 2.8)				
A.1 Description				
This metric measures the additional journey time during roadworks for all vehicle types, compared to an average benchmark journey time measured before the roadworks were in place.				
A.2 Outcome area				
Providing fast and reliable journeys				
A.3 Purpose				
This metric is intended to measure the overall delay experienced by road users that is caused by roadworks.				
A.4 Target				
None (PI)				
A.5 Metric calculation				
$Delay\ from\ roadworks = 60 \times \frac{\sum([Observed\ travel\ time - event\ profile\ travel\ time] \times profile\ flow \times length\ of\ link) + \sum(standard\ diversion\ delay \times profile\ flow)}{\sum Time\ travelled\ on\ the\ network}$				
Where travel time is in seconds per vehicle per mile. Delay from roadworks is calculated as the smaller of either (a) (Observed travel time – Speed limit travel time), or (b) (Observed travel time – event profile travel time) so delay from roadworks cannot be greater than overall delay. Delay from roadworks also cannot be negative, so in these cases delay from roadworks is changed to zero.				
Event profile travel time is the benchmark profile travel time before the roadworks were recorded as being in place.				
A.6 Unit	A.7 Decimal places	Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Minutes per hour travelled	Two	Monthly	Financial year	12 month rolling average
A.11 Coverage (specific to this metric)				
This metric excludes delays that arise during incidents in roadworks. The impact of major roadworks beyond Highways England control (e.g. roadworks imposed by HS2 and Heathrow expansion) are excluded.				
A.12 Input data (specific to this metric)				
Roadworks information from the Network Occupancy Management System (NOMS). Data is entered into NOMS by Highways England staff, suppliers and contractors.				
A.13 Definitions (specific to this metric)				
None				

PI	2.6	Journey time reliability	A. Definition and target	
Metric-specific information				
(see <i>delay-related metrics summary page</i> for information common to 2.1, 2.4, 2.5, 2.6, 2.7 and 2.8)				
A.1 Description				
The average difference between the observed travel time and the profile (typical) travel time.				
A.2 Outcome area				
Providing fast and reliable journeys				
A.3 Purpose				
This metric measures the delay experienced by road users when compared with their normal journey time and is intended to reflect the reliability of journey times.				
A.4 Target				
None (PI).				
A.5 Metric calculation				
$Journey\ time\ reliability = \frac{\sum([Observed\ travel\ time - profile\ travel\ time] \times profile\ flow \times length\ of\ link)}{\sum(Profile\ flow \times length\ of\ link)}$				
Where travel time is in seconds per vehicle per mile.				
Reliability = observed travel time minus profile travel time. If this is negative, then zero is used (as there is no reliability delay). If observed travel time is faster than speed limit travel time, then zero is used (as there is no delay or reliability delay).				
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Seconds per vehicle per mile	One	Monthly	Financial year	12 month rolling average
A.11 Coverage (specific to this metric)				
None				
A.12 Input data (specific to this metric)				
None				
A.13 Definitions (specific to this metric)				
None				

PI	2.7	Delay on gateway routes	A. Definition and target	
Metric-specific information				
(see <i>delay-related metrics summary page</i> for information common to 2.1, 2.4, 2.5, 2.6, 2.7 and 2.8)				
A.1 Description				
Average delay to users of gateway routes. Delay is calculated by comparing actual journey time with the minimum journey time (based on all vehicles travelling at the speed limit). It is a subset of the average delay metric.				
A.2 Outcome area				
Providing fast and reliable journeys				
A.3 Purpose				
This metric measures the overall delay experienced by users of roads serving the UK's most economically important ports and airports.				
A.4 Target				
None (PI)				
A.5 Metric calculation				
$\text{Average delay on gateway routes} = \frac{\sum([\text{Observed travel time} - \text{Speed limit travel time}] \times \text{profile flow} \times \text{length of link})}{\sum(\text{Profile flow} \times \text{length of link})}$				
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Seconds per vehicle per mile	One	Monthly	Financial year	12 month rolling average
A.11 Coverage				
Coverage is restricted to roads designated as gateway routes.				
A.12 Input data (specific to this metric)				
None				
A.13 Definitions (specific to this metric)				
None				

PI	2.8	Average Speed	A. Definition and target	
Metric-specific information				
<i>(see delay-related metrics summary page for information common to 2.1, 2.4, 2.5, 2.6, 2.7 and 2.8)</i>				
A.1 Description				
The average speed of vehicles travelling on the strategic road network				
A.2 Outcome area				
Providing fast and reliable journeys				
A.3 Purpose				
This metric provides a measure of the average speed experienced by users of the strategic road network.				
A.4 Target				
None (PI)				
A.5 Metric calculation				
$Average\ speed = \frac{\sum(profile\ flow \times length\ travelled)}{\sum(profile\ flow \times journey\ time)}$				
Where speed is in miles per hour.				
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Miles per hour	One	Monthly	Financial year	12 month rolling average
A.11 Coverage (specific to this metric)				
None				
A.12 Input data (specific to this metric)				
None				
A.13 Definitions (specific to this metric)				
None				

KPI	3.1	Pavement Condition	A. Definition and target																												
A.1 Description																															
<p>The percentage of pavement asset that does not require further investigation for possible maintenance. This measure reports on the overall strategic road network condition as a result of deterioration of the pavement network due to time and traffic and restoration of condition from the annual investment in maintenance.</p>																															
A.2 Outcome area																															
A well maintained and resilient network																															
A.3 Purpose																															
<p>The metric monitors how effectively Highways England is maintaining the road surface across the strategic road network.</p>																															
A.4 Target																															
<p>Percentage of the network (as defined by HAPMS, excluding DBFOs) requiring no further investigation to be maintained at 95% or above.</p>																															
A.5 Metric calculation																															
<p>Network condition is described by the condition of each 10m length of lane 1 of main carriageways in the network maintained by Highways England (ie not lengths forming parts of Design Build Finance and Operate (DBFO), concessions). The aspects of pavement condition used to report network condition are rutting, longitudinal profile, and skid resistance. The UK Design Manual for Roads and Bridges (DMRB) standards HD28 and HD29 define road conditions measured by network condition surveys. The target condition (Category 3a) is mid-way between 3 and 4:</p> <ul style="list-style-type: none"> • Category 1 – No visible deterioration • Category 2 – Low level deterioration and no action required • Category 3 – Moderate level of deterioration and investigation is required • Category 4 – Severe level of deterioration and intervention is required 																															
<p>The target condition is the percentage of the network assessed to have condition as good as or better than Category 3a. For the assessment of maintenance options, the condition associated with the preferred ‘do something’ option that is based on engineering standards, is likely to be between Categories 3 and 4. A 10m section of road is deemed to be a category 3a if any of the following thresholds are exceeded.</p>																															
Condition Parameter thresholds:																															
<table border="1"> <thead> <tr> <th>Condition Parameter</th> <th>Category 3a</th> </tr> </thead> <tbody> <tr> <td>Rut depth (mm)</td> <td>15.5</td> </tr> <tr> <td>Ride Quality – 3m Longitudinal Profile Variance (mm²)</td> <td></td> </tr> <tr> <td> Motorways</td> <td>3.3</td> </tr> <tr> <td> Rural Dual Carriageways</td> <td>3.3</td> </tr> <tr> <td> Urban Dual Carriageways</td> <td>3.85</td> </tr> <tr> <td> Rural Single Carriageways</td> <td>3.85</td> </tr> <tr> <td> Urban Single Carriageways</td> <td>6.55</td> </tr> <tr> <td>Ride Quality – 10m Longitudinal Profile Variance (mm²)</td> <td></td> </tr> <tr> <td> Motorways</td> <td>10.6</td> </tr> <tr> <td> Rural Dual Carriageways</td> <td>10.6</td> </tr> <tr> <td> Urban Dual Carriageways</td> <td>15.7</td> </tr> <tr> <td> Rural Single Carriageways</td> <td>15.7</td> </tr> <tr> <td> Urban Single Carriageways</td> <td>27.45</td> </tr> </tbody> </table>				Condition Parameter	Category 3a	Rut depth (mm)	15.5	Ride Quality – 3m Longitudinal Profile Variance (mm ²)		Motorways	3.3	Rural Dual Carriageways	3.3	Urban Dual Carriageways	3.85	Rural Single Carriageways	3.85	Urban Single Carriageways	6.55	Ride Quality – 10m Longitudinal Profile Variance (mm ²)		Motorways	10.6	Rural Dual Carriageways	10.6	Urban Dual Carriageways	15.7	Rural Single Carriageways	15.7	Urban Single Carriageways	27.45
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Urban Single Carriageways	27.45																														

KPI	3.1	Pavement Condition	A. Definition and target
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Ride Quality – 30m Longitudinal Profile Variance (mm ²)	
Motorways	88
Rural Dual Carriageways	88
Urban Dual Carriageways	98
Rural Single Carriageways	98
Urban Single Carriageways	145
Characteristic Skid Resistance (CSC)	IL – 0.05

Note that network condition is the latest measured condition, but the measurements are not used if the pavement surface has been maintained since the survey was undertaken. This section of pavement will be assessed in the next round of surveys. If the pavement length has been resurfaced since the condition survey, the length is assumed to be in good condition (ie not a category 3a) for the calculation of the KPI.

$$\frac{\text{Percentage of pavement asset that does not require further investigation for possible maintenance} = \frac{\text{Total lane 1 length of the network not requiring further investigation (better than Category 3a condition)}}{\text{Total lane 1 length of the network}} \times 100(\%)$$

Example (illustrative)

The network condition is based on survey information based on Lane 1. The example shows the length in good condition scaled up for the proportion of the network with data (condition and maintenance records).

Total lane 1 length of the network = 7,500 metres

Total lane 1 length of the network with condition data = 7,350 metres

Total lane 1 length of network data not requiring further investigation (better than Category 3a condition) = 7,055 metres

Total lane 1 length of the network not requiring further investigation (better than Category 3a condition) =
 = (7,055)/(7,350) x 7,500 = 7,199 metres

% of the network not requiring further investigation =
 = (7,199)/(7,500) x 100 = 96%

The scaling of network condition for missing condition data is undertaken separately for each defect. The annual report of network condition shows the condition of Lane 1, excluding the DBFO lengths in the network.

A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Percentage	One	Monthly	Financial year	Year-end percentage

A.11 Coverage

Each 10m length road survey data of all main-carriageways on the strategic road network (excluding Design, Build, Finance and Operate contracts), specifically lane 1 only.

A.12 Input data

Data is collected using:

- TRACS – Traffic Speed Condition Surveys – measures the pavement surface condition, including measuring Rutting and Enhanced Longitudinal Profile Variance (ELPV)
- SCRIM – Sideway-force Coefficient Routine Investigation Machines – measures the pavement skid resistance

PI	3.2	Structures Condition	A. Definition and target
A.1 Description			
The condition of Highways England's structures across the strategic road network			
A.2 Outcome area			
A well maintained and resilient network			
A.3 Purpose			
This metric monitors how effectively Highways England is maintaining its structures.			
A.4 Target			
None (PI)			
A.5 Metric calculations			
SCav = Average Condition score of an asset's structural elements			
SCcrit = Critical Condition based on the lowest condition score of any structural elements deemed as critical			
SCI = % of structures rated as 'good' in opinion of inspector			
<u>Calculation of SCav and SCcrit For an Individual Structure</u>			
$SCS_{Av} = \frac{\sum_{i=1}^N (ECI_i \times EIF_i)}{\sum_{i=1}^N EIF_i}$			
$SCS_{Crit} = \max\{ECI \text{ for elements with Very High Importance}\}$			
N is the total number of elements on the structure that have an ECI score and:			
ECI_i = Element Condition Index for element i			
EIF_i = Element Importance Factor for element i			
Average Condition Score : $SC_{Av} = 100 - 2\{(SCS_{Av})^2 + (6.5 \times SCS_{Av}) - 7.5\}$			
Critical Condition Score : $SC_{Crit} = 100 - 2\{(SCS_{Crit})^2 + (6.5 \times SCS_{Crit}) - 7.5\}$			

PI	3.2	Structures Condition	A. Definition and target
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Calculation of SC_{av} and SC_{crit} For Stock of Structures

Average Condition Score :
$$SC_{Av} = \frac{\sum ((SC_{i-Av}) \times (\sum Dim)_i \times (AVF_i))}{\sum ((\sum Dim)_i \times (AVF_i))}$$

Critical Condition Score :
$$SC_{Crit} = \frac{\sum ((SC_{i-Crit}) \times (\sum Dim)_i \times (AVF_i))}{\sum ((\sum Dim)_i \times (AVF_i))}$$

SC_{i-Av} = Average Condition score for structure type *i*

SC_{i-Crit} = Critical Condition score for structure type *i*

∑Dim = Sum of dimension quantity for Structure Type *i*

AVF_i = Asset Value Factor of structure type *i*

A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Number	One	Annual	Financial year	Condition score

A.11 Coverage

All Highways England-owned structures within scope for regular inspections on the strategic road network. Privately owned structures are not included.

A.12 Input data

Structures condition data

Structures type, dimensions, asset values

IAMIS Structures (Integrated Asset Management Information System)

PI	3.3	Technology availability	A. Definition and target		
A.1 Description					
The percentage of time that roadside technology assets are available and functioning. The assets are considered available and functioning if they are not experiencing a service-affecting fault.					
A.2 Outcome area					
A well maintained and resilient network					
A.3 Purpose					
This measure monitors the availability of roadside technology to perform the role for which it was installed.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\text{Technology availability \%} = 100 \times \sum \frac{\text{Time asset was available}}{\text{Total time in month}} \div \text{number of assets}$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	Two	Monthly	Financial year	12-month rolling percentage	
A.11 Coverage					
All roadside technology assets on all trunk roads and motorways forming the strategic road network including sections of the M25 managed by Design, Build, Finance and Operate (DBFO) organisations. The metric does not include the Regional Control Centres or National Road Telecommunications Services.					
A.12 Input data					
Asset Inventory Data and Fault Data from the Technology Performance Management System (TPMS)* National Traffic Information Service (NTIS) asset data taken from: <ul style="list-style-type: none"> Regional MIDAS (Motorway Incident Detection And Signalling) Daily Report fault lists* ESS Availability Data held on the Severe Weather Information System* HADECS Availability Data from the HADECS availability spreadsheet Ramp Metering Site Checks from the Weekly Ramp Metering Site spot check spreadsheet. 					
*During Road Period 2, TPMS will be decommissioned and replaced with ServiceNow, meaning the data sources with an asterisk will be moving to ServiceNow and will continue to be included as part of this measure.					
A.13 Definitions					
A service-affecting fault is a fault which materially affects the ability of the technology to perform the function for which it was installed.					

PI	3.4	Drainage resilience	A. Definition and target		
A.1 Description					
The percentage length of carriageway that does not have an observed significant susceptibility to flooding.					
A.2 Outcome area					
A well maintained and resilient network					
A.3 Purpose					
This metric will reflect progress in improvements to the reporting of flooding. It will help inform where investment is required to reduce risk and demonstrate progress in reducing the risk of flooding to the Strategic Road Network.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$Drainage\ resilience = \sum \frac{length\ of\ category\ C\ and\ D\ catchments}{total\ length\ of\ SRN} \times 100$					
Category C = Moderate risk					
Category D = Low risk					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	Zero	Monthly	Financial year	Percentage	
A.11 Coverage					
All trunk roads and motorways forming the strategic road network except Design, Build, Finance and Operate (DBFO) contracts but including the M25.					
A.12 Input data					
Base mapping information of strategic road network and drainage catchments.					
Flooding events and flooding hotspots (recorded on HADDMS) and associated assured mitigations.					
Catchment risk ratings assessed from the number, severity and location of flooding events.					
A.13 Definitions					
A highway drainage catchment is defined (in the standard CD 535) as a group of all the drainage systems and the adjacent land they drain, between two geographical high points of the highway network. Both carriageways of a dual carriageway are considered part of the same catchment, but risks can be assessed separately for each carriageway. A drainage highway catchment can include one or more drainage systems.					
The susceptibility to flooding is assessed for each drainage catchment with an Overall Catchment Flood Risk Status. The Flood Risk Status ranges from category A1 to D where A1 is Highest, A is Very High, B is High, C is Moderate, and D is Low. For this performance indicator only C and D are reported.					

PI	3.5	Geotechnical condition			A. Definition and target
A.1 Description					
The percentage length of the Highways England's geotechnical asset that is in good condition based on the ability of the asset to perform its function at the time of inspection (ie to support other highways assets).					
A.2 Outcome area					
A well maintained and resilient network					
A.3 Purpose					
This metric monitors how effectively Highways England is maintaining its embankments and cuttings.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\% \text{ in good condition} = \frac{(\text{total length in good condition})}{\text{total length}} \times 100$					
Where:					
<i>total length in good condition = total length – sum lengths of very poor and poor condition grades</i>					
<i>total length = the total cumulative length of the asset</i>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	Two	Quarterly	Financial year	Percentage	
A.11 Coverage					
All trunk roads and motorways forming the strategic road network except Design, Build, Finance and Operate (DBFO) contracts.					
A.12 Input data					
The assets are inspected at a frequency determined by risk and logistics. It can vary from 1 year to 10 years depending on the risk level. The data is collected by experienced personnel, working directly for, or on behalf of Highways England.					
All relevant geotechnical information for this metric is held on the geotechnical asset information system, which is described in the Highways England Asset Data Management Manual.					
The total asset length is taken from the length of geotechnical assets recorded in the geotechnical asset information system. This is the cumulative inspected length of the asset.					
The condition grade is derived from the asset inspection data recorded in the geotechnical asset information system in accordance with the standard HD41 (now CS641). It groups the asset into very good, good, fair, poor and very poor grades, based on its ability to perform its function at the time of inspection.					

KPI	4.1	Noise	A. Definition and target		
A.1 Description					
The number of households within mitigated Noise Important Areas where noise has been reduced through Highways England designated fund projects.					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
This metric monitors how effectively Highways England supports the health and wellbeing of communities by reducing noise exposure.					
A.4 Target					
7,500 households benefitting from noise reduction in mitigated Noise Important Areas (defined by the Department for Environment, Food and Rural Affairs (DEFRA)) using funding from the environment and wellbeing designated fund during Road Period 2					
A.5 Metric calculation					
$\sum \text{Households benefitting from noise mitigations within mitigated Noise Important Areas}$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Number	Zero	Monthly	5-year period	Count	
A.11 Coverage					
Noise Important Areas, as identified by DEFRA, on all trunk roads and motorways forming the strategic road network, including roads managed by Design, Build, Finance, and Operate (DBFO) organisations.					
A.12 Input data					
<p>Noise mapping / Noise Important Areas identification – Identification of Noise Important Areas is undertaken by DEFRA. Data is available in DEFRA’s document Strategic noise mapping - Explaining which noise sources were included in 2017 noise maps, published in July 2019. Note that it is currently anticipated that the noise mapping and Noise Important Areas datasets will be updated in 2024, but the 2019 dataset will be used for all of Road Period 2.</p> <p>Noise Important Areas can be added to dataset, or amended, by Highways England as the relevant highway authority (as set out in paragraphs 8.8 and 8.10 of DEFRA’s Noise Action Plan: Roads - Environmental Noise (England) Regulations 2006, published 2 July 2019).</p> <p>Mitigation project completions.</p> <p>Ordnance Survey data for numbers of households (domestic properties).</p>					

KPI	4.2	Biodiversity			A. Definition and target
A.1 Description					
Deliver no net loss of biodiversity, measured using an industry standard way of measuring biodiversity changes referred to as the biodiversity metric.					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
To support the government's ambition to embed environmental net gain in development and to provide transparency of our biodiversity performance.					
A.4 Target					
Achieve no net loss of biodiversity, across all Highways England activities, by the end of Road Period 2.					
A.5 Metric calculation					
<p>For each activity:</p> $Net\ change\ in\ biodiversity\ units = \sum POST\ units - PRE\ units$ $POST\ unit = size\ of\ habitat\ parcel \times measure\ of\ biodiversity\ quality \times risk\ factors$ $PRE\ unit = size\ of\ habitat\ parcel \times measure\ of\ biodiversity\ quality$ <p>Where:</p> <p>Size of habitat parcel in hectares (ha)</p> <p>Measure of biodiversity quality (of habitat parcel) derived from reference values for: distinctiveness, condition, strategic local, and connectivity</p> <p>Risk factors (for newly created habitat parcel) from reference values for: difficulty, time to target condition, and off-site risk. Source: The Biodiversity Metric 2.0 (JP029). Beta test version. Natural England.</p>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Biodiversity unit	One	Annual	5-year period	Count	
A.11 Coverage					
Habitat changes across all Highways England activities, where such activities commence within Road Period 2.					
A.12 Input data					
<p>Major project data (from Highways England activities commenced within Road Period 2)</p> <p>Operations project data (from Highways England activities commenced within Road Period 2)</p>					
A.13 Definition					
Biodiversity unit: A standard quantification of biodiversity made up of area and quality of habitats					

KPI	4.3	Air quality	A. Definition and target	
A.1 Description				
The number of strategic road network links in exceedance of the legal nitrogen dioxide (NO ₂) limits as set by the European Union and accepted by the government.				
A.2 Outcome area				
Being environmentally responsible				
A.3 Purpose				
Highways England supports delivery of the government's National Air Quality Plan, including the delivery of measures to achieve compliance in the shortest timescales possible alongside the strategic road network. During Road Period 2, Highways England have a KPI to measure the number of sections of the strategic road network which exceed the EU limit values agreed with the department.				
A.4 Target				
Bring links agreed with the department and based on the Pollution Climate Mapping model into compliance with legal NO ₂ limits in the shortest timescales possible				
A.5 Metric calculation				
$\text{Air quality} = \sum \text{Strategic road network links exceeding NO}_2 \text{ levels}$				
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Number	0	Annual	Calendar year	Count
A.11 Coverage				
All strategic road network links in exceedance of the legal NO ₂ level as informed in the Pollution Climate Mapping model and ratified by Highways England modelling and monitoring.				
A.12 Input data				
Pollution Climate Mapping model Air-quality data readings from the strategic road network Highways England Air Quality Modelling				

KPI	4.4	Highways England carbon emissions	A. Definition and target		
A.1 Description					
This metric will become operational from 1 April 2021. See Appendix C.					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
This metric will become operational from 1 April 2021. See Appendix C.					
A.4 Target					
This metric will become operational from 1 April 2021. See Appendix C.					
A.5 Metric calculation					
This metric will become operational from 1 April 2021. See Appendix C.					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
This metric will become operational from 1 April 2021. See Appendix C.					
A.11 Coverage					
This metric will become operational from 1 April 2021. See Appendix C.					
A.12 Input data					
This metric will become operational from 1 April 2021. See Appendix C.					

PI	4.5	Supply chain carbon emissions			A. Definition and target
A.1 Description					
The carbon footprint associated with Highways England’s supply chain and also normalised by the volume of work undertaken.					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
To calculate and consider the carbon impact of road projects and factor carbon into design decisions. Develop approaches to the construction, maintenance and operation of the network that are consistent with the government's plans for a low carbon future.					
A.4 Target					
None (PI)					
A.5 Metric calculations					
<p style="text-align: center;">Σ Tonnes of carbon dioxide equivalent emitted</p> $Carbon\ Intensity = \frac{Tonnes\ of\ CO_2\ equivalent\ emitted}{Emillion}$ <p>Two figures will be calculated and reported: Absolute and normalised CO₂e</p>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Tonnes CO ₂ e Tonnes CO ₂ e/£m	Zero	Annual	Financial year	Count Rate	
A.11 Coverage					
<p>All direct suppliers and major projects under Highways England management involved in the construction, maintenance and operation of the network.</p> <p>The normalised figure excludes Design, Build, Finance and Operate (DBFO) contracts.</p>					
A.12 Input data					
<p>Supply chain purchase and consumption of fuel, electricity and water, business and employee transport, materials and waste.</p> <p>Conversion factors (Fuel, Electricity and Water, Business and Employee Transport) from government (Department for Business, Energy and Industrial Strategy) Greenhouse gas reporting: conversion factors for company reporting.</p> <p>Conversion factors (Materials and Waste) from Bath Inventory of Carbon and Energy (ICE) Conversion Factors (Version 3 updated 2019).</p>					

PI	4.6	Condition of cultural heritage assets	A. Definition and target		
A.1 Description					
The overall condition of the culturally significant assets (as defined below) owned by Highways England.					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
This measure will drive Highways England to demonstrate its continued stewardship of its culturally significant assets in accordance with its responsibility to preserve and enhance cultural heritage.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\text{Cultural heritage score} = \sum (\text{asset value score} \times \text{vulnerability score})$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Numeric score	None	Annual	Financial year	Score	
A.11 Coverage					
All culturally significant assets owned by Highways England on the strategic road network, as defined by:					
<ul style="list-style-type: none"> • They are listed in at least one of the data sources (see input data below) • They have a cultural heritage asset plan • They are located on or overlapping with Highways England land • They meet these criteria after the Highways England asset on the land concerned has been commissioned 					
A.12 Input data					
Numeric quality score for each culturally significant asset Cultural Heritage Asset Management Plan (CHAMPs) reports Historic England Heritage at Risk Register (HARR) Cultural Heritage Asset data held within the Highways England Environmental Information System (EnvIS) (GIS Layer) National Heritage List for England (NHLE) Highways England Land Ownership boundary (GIS) Historic England Listed building data					

PI	4.7	Water quality	A. Definition and target		
A.1 Description					
The length of watercourse enhanced through the mitigation of medium, high, and very high-risk outfalls as well as through other enhancements such as river retraining/rewilding.					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
This metric monitors how effectively Highways England is improving the environment by reducing adverse effects on watercourses.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\text{Water Quality} = \sum \text{Length of watercourse enhanced through mitigating validated category A, B or C outfalls and other enhancements}$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Kilometres	Zero	Annual	Financial year	Sum	
A.11 Coverage					
Existing outfalls on all trunk roads and motorways forming the strategic road network including roads managed by Design, Build, Fund, and Operate (DBFO) organisations. Does not include outfall locations not verified as Category A, B or C. Category C locations are only included where an associated benefit is clearly demonstrated.					
Category definitions are as follows:					
<ul style="list-style-type: none"> • Category A – Very high risk. Where an assessment identifies a risk of pollution from an accidental spillage and/or a predicted failure of the Water Framework Directive Environmental Quality Standards for the receiving waterbody. • Category B – High risk. Where an assessment process has identified a risk of soluble AND sediment pollution for short term highway runoff-specific thresholds. • Category C – Moderate risk. Where an assessment process has identified a risk of soluble OR sediment pollution for short term highway runoff-specific thresholds. 					
A.12 Input data					
Detailed River Network (DRN) and base mapping: Geographical Information Systems (GIS)					
Outfall locations and categories: Drainage Database Management System (DDMS)					

PI	4.8	Litter	A. Definition and target		
A.1 Description					
The percentage of the strategic road network where litter is graded at A or B as defined in the Code of practice on litter and refuse 2006 .					
A.2 Outcome area					
Being environmentally responsible					
A.3 Purpose					
This metric monitors the cleanliness of the strategic road network in accordance with the Code of practice on litter and refuse.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
$\frac{\text{Length at grade A or B}}{\text{Length of Network}} \times 100$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	Annual	Financial year	Percentage	
A.11 Coverage					
Coverage is limited to sections of the strategic road network covered by Asset Delivery, including roads under local authority responsibility for clearing litter as defined under the Environmental Protection Act 1990 . The metric measures the whole of the Asset Delivery network annually.					
A.12 Input data					
Grading will be captured by Highways England inspectors as part of the network condition inspections.					

KPI	5.1	Road user satisfaction	A. Definition and target		
A.1 Description					
The percentage of drivers who are satisfied with their journey on the strategic road network as measured by the Strategic Roads User Survey (SRUS) conducted by Transport Focus.					
A.2 Outcome area					
Meeting the needs of all road users					
A.3 Purpose					
This metric gives Highways England a view of the long-term trends of how customers perceive their journeys on the strategic road network.					
A.4 Target					
Achieve an 82% road user satisfaction score in 2020-21 and 2021-22, with year-on-year increases in the following years. The exact targets for 2022-23, 2023-24, and 2024-25 will be set during 2021-22.					
A.5 Metric calculation					
The weighted percentage of drivers who respond 'very satisfied' or 'fairly satisfied' to the SRUS question: "Taking everything into account, how satisfied were you with your journey?". Survey weights are assigned by Transport Focus, based on traffic flow data.					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	Quarterly	Financial year	12-month rolling percentage	
A.11 Coverage					
A representative sample of drivers who use the trunk roads and motorways forming the strategic road network, including roads managed by Design, Build, Fund and Operate (DBFO) organisations.					
A.12 Input data					
SRUS survey data from Transport Focus – specifically the percentage of customers stating that they are 'very satisfied' or 'fairly satisfied' with their journey.					

KPI	5.2	Roadworks information timeliness and accuracy			A. Definition and target
A.1 Description					
<p>The percentage of overnight road closures that are accurately notified by Highways England seven days in advance.</p> <p>A correctly notified road closure is one that commences within +/- 1 hour of the start time stated 7 days in advance on the Network Occupancy Management System (NOMS).</p>					
A.2 Outcome area					
Meeting the needs of all road users					
A.3 Purpose					
This metric will help monitor performance in providing accurate and timely information about planned roadworks.					
A.4 Target					
Achieve 90% accuracy of roadworks information seven days (rolling) in advance of works by 2024-25, with an increasing trajectory of improvement through Road Period 2 from the level of performance achieved by the end of Road Period 1					
A.5 Metric calculation					
$\frac{\text{(The number of road closures correctly notified on NOMS)}}{\text{(total number of actual closures recorded on NOMS + road closures shown on NOMS a week ahead but subsequently cancelled)}} \times 100$					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	Monthly	Financial year	12-month rolling percentage	
A.11 Coverage					
<p>All road closures that are recorded on the NOMS.</p> <p>All trunk roads and motorways forming the strategic road network including roads managed by Design, Build, Fund and Operate (DBFO) organisations.</p> <p>The metric only includes full carriageway or slip road closures.</p>					
A.12 Input data					
Data is to be taken from NOMS.					

PI	5.3	Timeliness of information provided to road users through electronic signage			A. Definition and target
A.1 Description					
The average median time to set signs and signals on (all) motorways after Highways England has received notification of an incident, that requires signs and signals to be manually set.					
A.2 Outcome area					
Meeting the needs of all road users					
A.3 Purpose					
To understand the average median time that it takes to set signs and signals nationally. We know that our customers want timely information, especially within smart motorways, so it is important to thoroughly understand our capability within this area.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
The metric is calculated by taking a monthly median of the time taken to set initial signs and signals for a sample of instances.					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Minutes / Seconds	MM:SS	Monthly	Financial year	Monthly: a median of the sampled times over the month Annually: a median of the sampled times over the year	
A.11 Coverage					
Smart motorways and motorway designated roads					
A.12 Input data					
A sample of data is sourced from Control Works and is then provided to the Operations Performance and Intelligence team by the Performance Analysis and Modelling team.					

PI	5.4	Ride quality	A. Definition and target
A.1 Description			
<p>This measure reports the ride quality for the strategic road network using a subset of the pavement condition metric condition parameters. It is represented by the percentage of pavement asset delivering ride quality consistent with the 3m Enhanced Longitudinal Profile Variance (ELPV) value in Highways England’s standards, which is based on engineering factors and driver comfort.</p>			
A.2 Outcome area			
Meeting the needs of all road users			
A.3 Purpose			
<p>The measure aims to capture an aspect of performance that influences the car drivers’ experience of using the road.</p>			
A.4 Target			
<p>Percentage of the network (as defined by HAPMS, excluding DBFOs) where 3m ELPV is deemed to be category 2 and better, in accordance with the road condition standard, HD29.</p>			
A.5 Metric calculation			
<p>For ride quality network condition is described by the condition of each 10m lengths of lane 1 of main carriageways in the network maintained directly by Highways England (ie not lengths forming parts of Design Build Finance and Operate, DBFO, concessions). The aspect of pavement condition used to report ride quality is longitudinal profile passing a wavelength of 3m. The UK Design Manual for Roads and Bridges (DMRB) standards HD29 define road evenness conditions measured by network surface condition surveys. The PI condition for ride quality is category 2 range and better as defined in HD29.</p> <ul style="list-style-type: none"> • Category 1 – No visible deterioration • Category 2 – Low level deterioration & no action required • Category 3 – Moderate level of deterioration and investigation is required • Category 4 – Severe level of deterioration and intervention is required <p>The condition is reported as the percentage of the network assessed to have condition as good as or better than the specified category 2 condition range. For the assessment of maintenance options, the condition associated with the preferred ‘do something’ option based on engineering standards, is likely to be between category 3 and 4. The ride quality PI considers each 10m length of lane 1 and is deemed as acceptable if the lane1 is deemed to be in category 2 range and better.</p> <p>Condition Parameter thresholds:</p>			

PI	5.4	Ride quality	A. Definition and target
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Category →	1	Threshold Value ↓	2	Threshold Value ↓	3	Threshold Value ↓	4
1. MOTORWAYS AND RURAL DUAL CARRIAGEWAYS(†)							
Enhanced Variance (mm²)							
3m		0.7		2.2		4.4	
10m		1.6		6.5		14.7	
30m		22		66		110	
2. URBAN DUAL CARRIAGEWAYS (†)							
Enhanced Variance (mm²)							
3m		0.8		2.2		5.5	
10m		2.8		8.6		22.8	
30m		30		75		121	
3. RURAL SINGLE CARRIAGEWAY ROADS (†)							
Enhanced Variance (mm²)							
3m		0.8		2.2		5.5	
10m		2.8		8.6		22.8	
30m		30		75		121	
4. URBAN SINGLE CARRIAGEWAY ROADS (†)							
Enhanced Variance (mm²)							
3m		1.4		3.8		9.3	
10m		6.1		18.3		36.6	
30m		48		97		193	

(†)Based on the road classifications in HAPMS

Note that network condition is the latest measured condition, but the measurements are not used if the pavement surface has been maintained since the survey was undertaken, which will be reported as in good condition. If the pavement length has been resurfaced since the latest condition survey, the length is assumed in good condition, until the section is reassessed in a future survey.

Example (illustrative)

The network condition is based on survey information based on Lane 1. The example shows the length in good condition scaled up for the proportion of the network with data (condition and maintenance records).

Total lane 1 length of the network = 7,500 metres

Total lane 1 length of the network with condition data = 7,350 metres

Total lane 1 length of network data that is deemed to meet the needs of the car users (in category 2 range and better) = 7,055 metres

Total lane 1 length of the network is category 2 range and better =

$$= (7,055)/(7,350) \times 7,500 = 7,199 \text{ metres}$$

$$= (7,199)/(7,500) \times 100 = 96\% \text{ of the network}$$

The Ride Quality PI assesses the condition of Lane 1, excluding the DBFO lengths in the network.

A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach
Percentage	One	Monthly	Financial year	Year-end percentage

A.11 Coverage

For the ride quality PI, each 10m length road survey data of all main-carriageways on the strategic road network (excluding DBFOs), specifically Lane 1 only.

PI	5.4	Ride quality	A. Definition and target
A.12 Input data			
Data is collected using TRACS, ie Traffic speed Condition Surveys (measures the pavement surface condition), including measuring Rutting and Enhanced Longitudinal Profile Variance (eLPV). Only 3m eLPV wavelength is used for the PI reporting.			

PI	5.5	Working with local highways authorities to review diversion routes for unplanned events			A. Definition and target
A.1 Description					
Working with local highways authorities to review diversion routes for unplanned events.					
A.2 Outcome area					
Meeting the needs of all road users					
A.3 Purpose					
To influence better engagement with local highway authorities to identify ways to improve the customer experience of diversion routes for unplanned events.					
A.4 Target					
None (PI)					
A.5 Metric calculation					
The percentage of local highway authorities which Highways England engaged with, to review diversion routes for unplanned events.					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Percentage	One	Annual	Financial year	Percentage	
A.11 Coverage					
All local authorities within Asset Delivery areas that have a diversion route for unplanned events going through their area. With diversion routes for unplanned events being defined as:					
<ol style="list-style-type: none"> 1. A signed route to divert traffic around an unplanned closure of the motorway and all-purpose trunk road network. 2. A route agreed with all relevant traffic authorities for use in emergency situations. 3. A diversion route that has diversion signage permanently installed along the diversion route or temporary black on yellow signing to be put out when the diversion route is implemented. 					
A.12 Input data					
Engagement data from regional contacts					

KPI	6.1	Total efficiency	A. Definition and target		
A.1 Description					
The value of operational and capital expenditure efficiency achieved by the end of Road Period 2.					
A.2 Outcome area					
Achieving efficient delivery					
A.3 Purpose					
For Road Period 2 and beyond the intent will be to continue to demonstrate improvement in the relationship between inputs and outputs or outcomes, for the benefit of the taxpayers through effective and productive delivery, and road users through better value delivery.					
A.4 Target					
Demonstrate efficiency of £2.23 bn of capital and operational expenditure by the end of Road Period 2.					
A.5 Metric calculation					
Sum of all delivered capital and operational efficiency. All principles for evidencing efficiency in Road Period 2 are set out in the Efficiency and Inflation Monitoring Manual.					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
Pounds sterling	Zero	Annual	Financial year	Sum	
A.11 Coverage					
All Road Period 2 capital and operational expenditure within statement of funds available (SoFA). The principles for defining, demonstrating and evidencing the delivery of the Road Period 2 efficiency are set out in the Efficiency and Inflation Monitoring Manual.					
A.12 Input data					
Oracle financial data WBS cost management systems CEMAR – Change control database Efficiency registers – Tracking of bottom up efficiency Capital portfolio management data Cost Intelligence data – Unit cost analysis databases Cost estimates – Cost estimating data sources					

PI	6.2	Cost performance index and Schedule performance index			A. Definition and target
A.1 Description					
Progress of schemes in construction through reporting Cost performance index (CPI) and Schedule performance index (SPI).					
A.2 Outcome area					
Achieving efficient delivery					
A.3 Purpose					
Measure the cost and schedule performance across schemes in construction from Project Control Framework (PCF) stage 6 (construction) through to end of PCF stage 7 (closeout).					
A.4 Target					
None (PI)					
A.5 Metric calculation					
<p>Earned Value Management as defined by the industry standard:</p> <p>Schedule Performance Index (SPI) is the Budgeted Cost of work Performed (BCWP) divided by the Budgeted Cost of Work Scheduled (BCWS). A figure less than 1.0 indicates that work is being delivered slower than planned; greater than 1.0 indicates that work is being delivered faster than planned.</p> <p>Cost Performance Index (CPI) is the Budgeted Cost of Work Performed (BCWP) divided by the Actual Cost of Work Performed ACWP). A figure less than 1.0 indicates that the value of work delivered is less than the amount to money spent to earn it, greater than 1.0 indicates the value of work delivered is greater than the money spent to earn it.</p> <p>At Highways England the SPI/CPI is measured against the Project Performance Baseline as approved and governed by the executive HE Investment Decision Committee (HEIDC).</p>					
A.6 Unit	A.7 Decimal places	A.8 Reporting frequency	A.9 Reporting period	A.10 Statistical approach	
1	Two	Quarterly	Financial year	Ratio	
A.11 Coverage					
There will be a separate score for each scheme at PCF stage 6.					
A.12 Input data					
A commercially assured forecast of cost and an updated schedule are submitted by the supply chain and uploaded via a template into the cost management system PRISM, with schedule data on progress uploaded to the Highways England project integrated programme.					

Appendix B. Change request form

All proposed changes (however minor) to information contained within the OMM must be submitted to the RIS Performance compliance team using the Road Period 2 OMM Change Request Form.

To ensure that the current version of the form is used please email OperationalMetricsManual@HighwaysEngland.co.uk to obtain a copy.

Appendix C. Metrics in development

The table below details commitments in relation to the RIS2 *Performance Specification*. Commitments in italics in the table below are not listed as commitments in their own right in the RIS2 document, but are activities which are noted within a KPI or PI in the RIS2 document, so are in the table below for completeness

For commitments to investigate the development of new metrics, these will follow the following standard stages:

- **Concept:** this stage will require engagement between relevant parties, including DfT, ORR and Transport Focus as appropriate, and conclude with having a confirmed project brief.
- **Feasibility:** this stage will comprise of initial investigations around the feasibility of creating a metric, including a view on possible data sources and estimated development costs. A decision to proceed or not to development will be made at the end of this stage.
- **Development:** data and metric options will be fully assessed at this stage, with the preferred option developed
- **Validation:** this stage includes shadow running of the chosen metric, with analysis of results and recommendations for future use made.

At the end of each stage there will be a review, when the milestones for future stages will be evaluated.

Commitment	Concept completion date	Review	Feasibility completion date	Review	Development completion date	Review	Validation completion date
Improving safety for all							
Work with Transport Focus to investigate a rate-based measure for non-motorised user casualties.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review
IRAP baseline to be established in 2021, and 2025 forecast developed, based on latest iRAP methodology.	N/A	Review	N/A	Review	Q2 2021–22	Review	N/A
Providing fast and reliable journeys							
<i>Network availability KPI: Existing metric to be replaced by a new expanded metric with target based on baselining work undertaken during 2020–21</i>		Review		Review	Q3 2020–21	Review	Q4 2020–21

Commitment	Concept completion date	Review	Feasibility completion date	Review	Development completion date	Review	Validation completion date
Working with Transport Focus, investigate the development of new metrics on journey time reliability which reflects more accurately road users understanding of reliability, and delay in roadworks.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review
Investigate new PIs on delays from incidents and delays on the local road/SRN boundary, and an alternative performance measure for smart motorway operation to keep track that these roads are delivering their intended journey-time related objectives.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review
A well maintained and resilient network							
Implement the AMDP for RP2 as described above (in the RIS document)	Agree AMDP deliverables for the following financial year: Q4 each year End of year report: Q1 the following year End of year review of deliverables: Q2 the following year						
Investigate an improved structure condition metric during RP2, and an alternative indicator for technology assets.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review
<i>Pavement condition KPI: Target for years 3 onwards will be based on the concept of road surface in good condition and determined through parallel running using the new metric trialled in RP1.</i>							Q4 2021–22
<i>Drainage resilience PI: From 2024–25 it is intended that this metric will be weather normalised.</i>					Q3 2021–22		Q3 2023–24
Being environmentally responsible							
<i>Highways England carbon emissions KPI: Reduce Highways England's carbon emissions as a direct result of electricity and fuel use and the day to day operational activities during RP2, to levels defined by baselining and target setting activities in 2020–21.</i>	Inventory and asset register update; data collation including project action plans: Q3 2020-21 Start of formal sign-off process of new metric and target with DfT: Q4 2020-21 Completion of validation; approvals of target: Q4 2020-21						Q4 2020–21
Investigate, and as appropriate develop, new environmental metric(s) informed by the natural capital approach.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review		TBC following review

Commitment	Concept completion date	Review	Feasibility completion date	Review	Development completion date	Review	Validation completion date
Investigate and assess incorporating into new and existing contracts air quality standards for supply chain vehicles deployed on Highways England work, and associated reporting requirements. A more detailed timetable for these investigations will be produced in Year 1 of RP2, as well as potential implementation opportunities identified by that stage.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review		TBC following review
Meeting the needs of all road users							
Work with Transport Focus to develop satisfaction surveys for cyclists and pedestrians that can be used, if possible, as the basis of a PI later in RP2.	N/A: Transport focus led commitment						
Work with Transport Focus to develop satisfaction surveys for logistics and coach managers that can be used, if possible, as the basis of a PI later in RP2.	N/A: Transport focus led commitment						
Review SRUS performance in year 2 of RP2 to determine the road user satisfaction targets for post 2021-22.	N/A		N/A		N/A		Q4 2021–22
Develop with Transport Focus during RP2 a measure of ride quality which reflects road users' experience of the network.	Q2 2020–21	Review	Q4 2020–21	Review	Q2 2021–22	Review	Q4 2021–22
Investigate expanding the scope of the working with local highways authorities PI to include diversion routes linked to planned roadworks.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review
Investigate expanding the scope of the timeliness of electronic signage information PI to potentially include the time taken to adjust and clear signs.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review
Achieving efficient delivery							
Investigate and look to develop new or improved metrics to monitor cost and schedule for enhancement scheme development and construction, engaging with ORR.	Q3 2020–21	Review	Q2 2021–22	Review	TBC following review	Review	TBC following review

Appendix D. Glossary of key terms and acronyms

Key terms	Definitions
Calendar year	The year running from 1 st January to 31 st December.
Casualty	A person killed or injured in an incident excluding suicide. Casualties are sub-divided into killed, seriously injured and slightly injured.
Fatal injury	Any casualties who sustained injuries which caused death less than 30 days after an incident.
Financial year	The year running from 1 st April to 31 st March.
Flood	The accumulation or passage of water at the ground surface where it is not intended.
Geotechnical asset	The man-made or natural earthworks below the road pavement layers and the adjacent land beside the road. These comprise two types: Major Earthworks and Minor Earthworks.
Incident	An event on the highway requiring intervention or management by Highways England or another third party. Types of event are breakdown, obstruction/debris, road traffic collision and other.
Mitigation	An intervention such as a capital scheme or management measure that reduces a risk.
Road Safety Foundation	A charitable trust who manages the iRAP license and activity.
Serious injury	An injury for which a person is detained in hospital as an 'in-patient', or any of the following injuries, whether or not they are detained in hospital: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident. Hospitalisation procedures will vary regionally.
Structure	Assets including bridges, tunnels, retaining walls, culverts, gantries, masts and ancillaries.
Supply Chain	External organisations providing resources, activities, and information to Highways England in order to help meet its business requirements.
Traffic	Vehicles moving on a public highway.

Acronyms	Definitions
AMDP	Asset Management Development Plan
CPI	Cost Performance Index
DBFO	Design Build Finance Operate. A type of private-sector finance scheme
DMRB	Design Manual for Roads and Bridges
ESS	ESS Earth Sciences
FVD	Floating Vehicle and sensor Data
GIS	Geographical Information Systems
HADDMS	Highways Agency Geotechnical Data Management System
HADECS	Highways Agency Digital Enforcement Camera System
HAPMS	Highways England Pavement Management System
INRIX	A provider of location-based data and analytics
iRAP	International Road Assessment Programme
KPI	Key Performance Indicator
KSI	Casualties which have been killed or seriously injured
MIDAS	Motorway Incident Detection and Automatic Signalling. A system for detecting queuing traffic and alerting drivers approaching queueing traffic.
NOMS	Network Occupancy Management System. The system used to manage roadworks.
ORR	Office of Rail and Road
PCF	Project Control Framework
PI	Performance Indicator
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations. Legislation which regulates the obligation to report deaths, injuries, diseases and dangerous occurrences including near misses which take place at work or in connection with work.
RIF	Roads Information Framework. A data warehouse containing command and control data.

RIS	Roads Investment Strategy
SRN	Strategic road network. It comprises the motorways and some A-roads.
SRUS	Strategic Roads User Survey
STATS19	<p>Traffic incident dataset recorded by police forces and published by the Department for Transport annually. Provides details of locations, vehicles and casualties involved in incidents.</p> <p>The STATS19 Road Accident dataset includes any incident on the public highway in Great Britain which is reported to the police and involves injury or death. These accidents are recorded by police officers on a STATS19 report form. The form collects a wide variety of information about the accident (such as time, date, location, road conditions) together with the vehicles and casualties involved and contributory factors to the accident as interpreted by the police. The form is completed at either the scene of the accident, or when the accident is reported to the police.</p>
TAME	Traffic Appraisal, Modelling and Economics
TMU	Traffic Monitoring Unit. A loop in the pavement which counts traffic.
TPMS	Technology Performance Management System. A system for monitoring roadside technology.

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